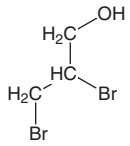
2,3-Dibromo-1-Propanol
CAS No. 96-13-9

Reasonably anticipated to be a human carcinogen
First Listed in the *Tenth Report on Carcinogens* (2002)



Carcinogenicity

2,3-Dibromo-1-propanol (DBP) is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity from studies in experimental animals, which indicates there is an increased incidence of malignant and/or a combination of malignant and benign tumors at multiple tissue sites in multiple species of experimental animals (NTP 1993). DBP painted onto the skin of rats for up to 55 weeks induced tumors of the skin, nasal mucosa, digestive tract, Zymbal gland, liver, kidney, tunica vaginalis, and spleen. Mice similarly exposed for up to 42 weeks had increased numbers of tumors of the skin, forestomach, liver, and lung.

No adequate human studies of the relationship between exposure to DBP and human cancer have been reported.

Additional Information Relevant to Carcinogenicity

DBP is genotoxic in bacterial and mammalian test systems, including *Salmonella typhimurium*, *Escherichia coli*, V79 hamster cells, and mouse lymphoma cells. It also induces sex-linked recessive lethal mutations and reciprocal translocations in *Drosophila melanogaster*. DBP induces chromosomal aberrations in Chinese hamster ovary cells in culture, but it does not induce micronuclei in bone marrow of mice administered DBP by injection.

No available data suggest that mechanisms thought to account for DBP's induction of tumors in experimental animals would not also operate in humans.

Properties

DBP is a colorless liquid. It is a halogenated aliphatic alcohol that is soluble in water, alcohol, ether, benzene, and acetone (HSDB 2001).

Use

The major use of DBP is as an intermediate in the production of flame retardants, insecticides, and pharmaceuticals. DBP was used in the production of TRIS-BP, a flame retardant used in children's clothing and other products (HSDB 2001). TRIS-BP was banned from use in sleepwear in 1977 by the Consumer Product Safety Commission (CPSC) after studies showed that TRIS-BP caused cancer in laboratory animals (CPSC 1977).

Production

Only one U.S. producer of DBP was identified, but no production levels were provided (HSDB 2001). U.S. production of DBP was more than 10 million lb in 1976 (Fishbein 1979). Production of DBP decreased drastically after the CPSC ban on the use of DBP and TRIS-BP in sleepwear. Current production values have not been reported (NTP 1993). The U.S. Environmental Protection Agency (EPA) reported the annual U.S. production of DBP to be less than 1 million lb and did not list it among the high production volume chemicals (EPA 1994).

Exposure

The primary routes of human exposure to DBP are inhalation and dermal contact. DBP has been determined to be a metabolite of TRIS-BP in humans (Blum *et al.* 1978). Over 50 million children who wore sleepwear treated with TRIS-BP may have been exposed to DBP (as a metabolite of TRIS-BP) before the 1977 CPSC ban (Blum *et al.* 1978).

Occupational exposure to DBP may occur through inhalation and dermal contact in those industries where DBP is used to produce flame-retardant materials, pharmaceuticals, and insecticides. No information on estimated occupational exposures to DBP was found (HSDB 2001). Releases of DBP into the environment have not been reported (TRI99 2001).

Regulations and Guidelines

No specific regulations or guidelines relevant to reduction of exposure to DBP were identified.

REFERENCES

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